

bushing, a slight taper on the remainder of the arbor being sufficient to prevent the bushing from turning on the arbor. When bushings are held on an ordinary arbor or mandrel the operator is never quite sure that the hole and the outside of the bushing are concentric, as one end of the arbor, owing to its taper, does not quite fill the hole. This is illustrated in Fig. 19. Both Figs. 18 and 19 are somewhat exaggerated to illustrate the principle.

In grinding lining and solid bushings, due allowance must be made for a driving fit in the body of the jig. There are three methods in common use for making driving fits on this class of work: First, grinding the bushing until the lower end just enters the hole, the bushing being slightly tapered to bring it to a snug fit when pressed into place; second, grinding the

Fig. 19. Improper Fit of Bushing on Ordinary Arbor

bushing straight for its entire length, leaving it just enough oversize to make a good driving fit; and third, grinding the bushing for nearly its entire length just enough oversize to make a good driving fit, and grinding about one-eighth its length just enough undersize to enter the hole.

The first method is not considered very good practice, as the bushing contracts more at the top than elsewhere, owing to the taper, which leaves the hole in the bushing tapered. The second method is very poor practice, as the bushing is liable to cramp while being forced in place, which results in an unsatisfactory job, as the hole in the jig is generally sheared by the sharp end of the bushing. The third method is correct, as the part that is ground to fit the hole acts as a pilot, thus insuring the proper starting of the bushing, and the hole, being straight,

insures even contraction.
, In making allowances for driving fits, inch
far each